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A Limited Survey of the Mammalian Fauna of the FAP 310 (US 67) Project Corridor, Morgan, Cass, Schuyler, and McDonough Counties, Illinois

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Submitted by
Joyce E. Hofmann and William C. Handel
Center for Biodiversity
Illinois Natural History Survey
607 E. Peabody Drive
Champaign, IL 61820

Prepared for
Bureau of Design and Environment
Illinois Department of Transportation
2300 S. Dirksen Parkway
Springfield, IL 62764

The Illinois Department of Transportation (IDOT) has proposed the construction of a four-lane, limited-access expressway between Jacksonville in Morgan County and Macomb in McDonough County. This project is part of the on-going process of up-grading US 67 within Illinois, from the St. Louis metropolitan area to the Quad Cities. It would include construction of a new bridge over the Illinois River at Beardstown and by-passes around some of the towns along existing US 67. As part of the process of preparing an Environmental Impact Statement for the FAP 310 project, the Bureau of Design and Environment of the IDOT requested that Illinois Natural History Survey (INHS) personnel conduct a series of biological surveys within the project corridor. This report presents the results of the survey of the mammalian fauna in the FAP 310 corridor that was conducted during 1996 and early 1997. The objectives of the survey were: (1) to determine the presence of threatened or endangered species of mammals within the project corridor or identify suitable habitat for any of these species, and (2) to determine the species of mammals that occupy the major habitat types that occur within the corridor.

Project Area

The FAP 310 project corridor extends approximately 160 km (100 miles) through Morgan, Cass, Schuyler, and McDonough counties in western Illinois (Figure 1). It is located on the Concord, Chapin, Meredosia, Cooperstown, Arenzville West, Beardstown, Rushville South, Rushville North, Industry, and Bardolph U.S. Geological Survey 7.5' topographic quadrangles. The southern terminus of the corridor is northwest of the city of Jacksonville where this section of the expressway would connect to a proposed Jacksonville by-pass. Two alternate alignments have been proposed between Jacksonville and Beardstown, one following existing US 67 and the other east of US 67 in the vicinity of the Burlington Northern Railroad. North of Beardstown the proposed alignment follows existing US 67 except for by-passes around Industry and Rushville and the relocation of a curve near Littleton. The northern terminus of the corridor is at US 136 east of Macomb.

Much of the FAP 310 project corridor lies within the Western Forest-Prairie Natural Division, an area of level to rolling uplands, ravines, and floodplains (Schwegman 1973). In pre-settlement times forest was the predominant vegetation in the division as a whole, with prairies occurring on the uplands (Schwegman 1973). The Illinois River valley at Beardstown is within the Illinois River Section of the Upper Mississippi River and Illinois River Bottomlands Natural Division and the area south of Beardstown is part of the Illinois River Section of the Illinois River and Mississippi River Sand Areas Division (Schwegman 1973). The corridor consists mostly of agricultural and developed land. Areas of upland forest remain, primarily on rolling terrain and ravines between Beardstown and Rushville and along the bluffs near Arenzville. Floodplain forest is present along the Illinois River at Beardstown and Mauvaise Terre Creek in the southern portion of the corridor. South of Beardstown where the soil is very sandy there are remnants of sand prairie and degraded sand savanna. The project corridor also includes a small portion of Beardstown Marsh and crosses several streams and Schuy-Rush Lake. The biological communities within the FAP 310 corridor are being mapped by Jeffrey Olson, INHS.

Methods

Records

Because of the secretive habits of many mammals, no body of observational records exists comparable to that available for birds. Hoffmeister (1989) lists museum specimens of mammals from Illinois that he had examined and provides additional distribution records from the scientific literature. This was the primary source of information on mammals that occur in Morgan, Cass, Schuyler, and McDonough counties. Museum specimens come from a variety of sources (e.g. scientific surveys, roadkills) and provide site-specific distributional information on all types of

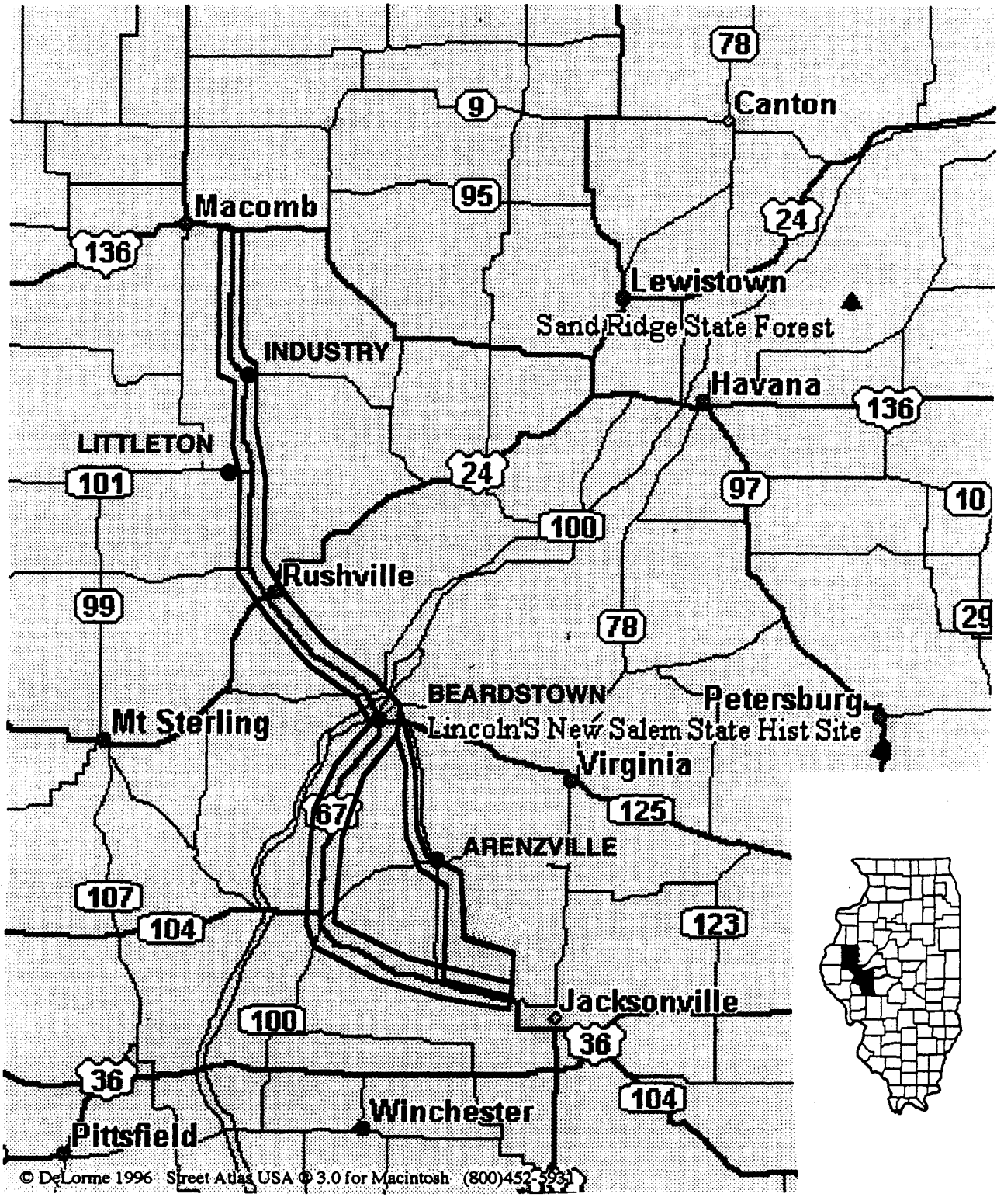

Figure 1. Location of the FAP 310 (US 67) project corridor in Morgan, Cass, Schuyler, and McDonough counties, Illinois

mammals; however, some geographical areas and some of the larger species are under-represented in collections. Bat specimens that had been tested for rabies by the Illinois Department of Public Health and sent to the INHS for identification and bat surveys conducted throughout the state by the INHS and Illinois Department of Natural Resources (IDNR) provide additional information on the distribution of bats. The IDNR produces annual reports on the estimated harvests of game animals and furbearers in the state; these data are compiled for multi-county wildlife management units and are not site-specific. They do, however, provide general information on the relative abundance and economic importance of these species in different regions of the state. Recent records for threatened and endangered species in Illinois are included in the Illinois Natural Heritage Database (INHD; IDNR, Division of Natural Heritage). The scientific literature and unpublished sources were also checked for older records of threatened and endangered species.

Mist Netting for Bats

Bats were captured during the summer by mist netting at stream sites in the project area where the branches of trees on both banks created a natural canopy above the stream corridor. Black nylon mist nets (38 mm mesh) 6 or 9 m in length which could be spread to a width of 2.6 m were used (Avinet, Inc., Dryden, NY). The nets were suspended above the stream between a pair of metal poles 6.2 m in height. Nets of equal length were stacked vertically and suspended by attaching the ends of the nets to a rope and pulley system on each pole. Using the pulley systems, the top of the uppermost net could be raised to a height of 6.2 m and the nets could be lowered quickly to remove bats. Nets were positioned perpendicular to the stream and directly under the canopy; thus, when the nets were raised they blocked most of the flyway along the stream corridor. A detailed description of this mist-netting system is given in Gardner et al. (1989). The nets were raised at dusk (approximately 2100 h) and checked at 10- to 15-minute intervals until midnight. Mist netting was conducted on nights when environmental conditions were considered favorable for captures, i.e. no precipitation, no bright moonlight, no strong winds, and temperatures above 9°C (Gardner et al. 1991a).

The following data were recorded for each bat captured: species, sex, age class (juvenile or adult), reproductive condition, and weight. Age class in bats is determined by the degree of closure of the phalangeal epiphyses; juveniles (i.e. young of the year) are recognizable because of the incomplete ossification of the epiphyses (Barbour and Davis 1969). The reproductive condition of males is assessed by the size of the epididymides which are covered by pigmented sheaths and located lateral to the tail. Sexually mature males have enlarged or distended epididymides which can be seen through the interfemoral membrane (Racey 1988). Pregnant females can be recognized by gently palpating the fetus through the abdomen, and lactating and post-lactating females by examination of the teats. Weights were determined by suspending the bats from a Pesola scale and recorded to the nearest 0.1 gram. Bats were released at the capture site immediately after examination.

Small Mammal Trapping

Terrestrial small mammals were captured in Sherman live traps (8 x 9 x 23 cm) placed in the major habitat types within the project area. At most sites a grid of 40 traps (4 rows of 10 traps) placed on the ground at approximately 10-m intervals was established. At some sites the size or configuration of the area made it necessary to alter the arrangement of traps. Individual traps were positioned so as to increase the chance of capturing an animal, e.g. next to a log or in a runway. Traps were baited with a mixture of rolled oats and peanut butter and set during the late afternoon. They were checked the following morning and left open (unset) during the day. A trapping session consisted of three consecutive nights at each site. All trapping was conducted during the same season (spring). Temperature, precipitation, and the amount of moonlight can

affect the activity (and trappability) of small mammals (Call 1986). It was not possible to control for all environmental factors because trapping could not be completed during a single three-day period, but conditions were fairly similar.

Whenever possible, the following information was recorded for each individual captured: species, sex, reproductive condition, and weight. The sex of shrews cannot be accurately determined by external examination. The position of the testes (either descended into the scrotum or abdominal) was used as a general indicator of the reproductive condition of male rodents. Females were examined for signs of pregnancy (by gentle palpation of the abdomen) or lactation (by examination of the teats). Weights were determined with a Pesola scale and recorded to the nearest gram. In order to determine the number of individuals of each species captured at a site, each animal trapped on the first or second morning of a trapping session was marked by clipping a small patch of fur on its back. This made it possible to distinguish individuals that were re-captured from those that were being caught for the first time. After examination the animals were released at the trap location.

Observation

Any mammals observed while driving or walking in the corridor or found as roadkills within the corridor were recorded, along with the type of habitat in which they occurred. Small mammal trapping grids and other areas of natural habitat were searched for mammal sign, e.g. scat, tracks, dens, or nests (Murie 1954). The corridor was visited during the winter specifically to look for tracks in the snow.

Threatened and Endangered Species

Nine species of mammals are listed as threatened or endangered in Illinois (Illinois Endangered Species Protection Board 1994), including two species that are also federally endangered (U.S. Fish and Wildlife Service 1991) - the Indiana bat (*Myotis sodalis*) and gray bat (*M. grisescens*). Of these nine species, six have limited ranges in the state (Herkert 1992) and have no potential to occur within the FAP 310 project corridor. The remaining three listed species -- the Indiana bat, state-endangered river otter (*Lutra canadensis*), and state-threatened bobcat (*Lynx rufus*) -- are more widely distributed in Illinois (Herkert 1992, INHD). Accordingly, efforts were limited to determining if any of these species occurred within the project corridor by checking records and conducting field surveys and/or habitat assessments.

Mist netting, as described above, conducted at stream sites within the corridor was designed to determine the presence of Indiana bats. The forested banks of the Illinois River and Mauvaise Terre Creek were examined for river otter sign, e.g. tracks, slides, or scat, as described by Murie (1954). Because of the elusive nature of bobcats, the likelihood of observing these animals or their sign is low. Thus, field work consisted primarily of determining if areas of suitable habitat for this species occurred in the corridor.

Results

Records

Twenty-five species of mammals that had been documented in Morgan, Cass, Schuyler, and McDonough counties prior to this survey are listed in Table 1. This relatively small number of species is probably indicative of limited sampling rather than a depauperate mammalian fauna because several common species have not been recorded from these counties. Hoffmeister (1989) found museum specimens of 22 species. The presence of two additional bat species was determined from rabies specimens and bat surveys (INHS, unpublished data) and Nixon et al.

(1978) documented the occurrence of the gray squirrel (*Sciurus carolinensis*). The significance of the records for the listed Indiana bat and river otter will be discussed later in this report.

Table 1. Mammal species recorded from Morgan, Cass, Schuyler, and McDonough counties, Illinois (source unless otherwise noted: Hoffmeister 1989)

Species	Common name	M	C	S	McD
Didelphimorphia					
Didelphis virginiana	Virginia opossum	X			
Insectivora					
Scalopus aquaticus	eastern mole	X			
Chiroptera					
Myotis lucifugus	little brown bat	X	X	X[+]	X
*Myotis sodalis**	Indiana bat	X	X[++]	X[++]	X
Myotis septentrionalis	northern long-eared bat			X[+]	X[+++]
Eptesicus fuscus	big brown bat	X	X	X	X
Lasiurus borealis	red bat	X	X[+]	X[+]	X[+++]
Lasiurus cinereus	hoary bat	X			
Pipistrellus subflavus	eastern pipistrelle			X[+]	X[+]
Rodentia					
Spermophilus tridecemlineatus	thirteen-lined ground squirrel		X		
Spermophilus franklinii	Franklin's ground squirrel	X			
Sciurus carolinensis	gray squirrel	X[#]	X[#]	X[#]	X[#]
Sciurus niger	fox squirrel	X	X	X[#]	X[#]
Geomys bursarius	plains pocket gopher	X	X		
Castor canadensis	beaver		X		
Reithrodontomys megalotis	western harvest mouse	X			X
Peromyscus leucopus	white-footed mouse		X		
Microtus pennsylvanicus	meadow vole				X
Microtus ochrogaster	prairie vole		X		X
Synaptomys cooperi	southern bog lemming	X			X
Carnivora					
Canis latrans	coyote	X	X		
Mustela nivalis	least weasel				X
Mustela vison	mink	X	X		
Taxidea taxus	badger	X[##]	X		X[##]
*Lutra canadensis***	river otter	X	X[###]		

* federally endangered species; ** state-endangered species; [+] INHS unpublished data; [++] INHD; [+++] Clark and Clark 1987; [#] Nixon et al. 1978; [##] Warner and Ver Steeg 1995; [###] Hubert 1978

Mist Netting for Bats

Most streams crossed by the FAP 310 corridor were either too narrow for mist netting or had no trees on their banks. The West Branch of Sugar Creek and Mauvaise Terre Creek provided suitable habitat for bats and favorable conditions for mist netting. Mist netting was conducted at three locations on these two streams during June and July 1996. In all, only four individuals representing three species were captured (Table 2). Brief descriptions and results for the three sites are presented below.

Table 2. Bats captured during three nights of mist netting in the FAP 310 project corridor, Morgan and Schuyler counties, June and July 1996

Species	Common name	Number of individuals
Eptesicus fuscus	big brown bat	1
Lasiurus borealis	red bat	2
Myotis lucifugus	little brown bat	1

West Branch Sugar Creek (T.3N, R.2W, SW/4 Sec. 11; Industry 7.5' quadrangle; Figure 2)

The West Branch of Sugar Creek is located in the northern portion of the project corridor, just south of the McDonough/Schuyler county line. Relatively extensive areas of terrace and upland forest occur to the north and south of the stream. The netting site was approximately 200 m downstream from the US 67 bridge. At this location the stream channel was 10 m wide. Water 0.3 to 0.6 m deep filled much of the channel at the net site, but large gravel bars were exposed along other portions of the stream. The substrate consisted of gravel and sand. The nets were placed just upstream of a riffle; riffles occurred at approximately 50 m intervals. The canopy was incomplete above parts of the stream, but branches formed a complete canopy above the nets. The south pole was under the branches of an immature river birch (*Betula nigra*) at the base of a steep bank. The north pole was under the branches of a large cottonwood (*Populus deltoides*) at the edge of the water and about 3 m from the base of the bank. Other trees along the banks included silver maple (*Acer saccharinum*), box elder (*A. negundo*), sycamore (*Platanus occidentalis*), and osage orange (*Maclura pomifera*).

Mist netting was conducted at this site on the night of 24 June 1996. The temperature was 20°C at dusk and 18°C at midnight. The air was calm and the sky clear. There was a first quarter moon that night and the net site remained dark during the netting period. No bats were captured at this site.

Mauvaise Terre Creek (T.15N, R.11W, NW/4 Sec. 9; Concord 7.5' quadrangle; Figure 3)

Mauvaise Terre Creek is located in the southernmost portion of the corridor. The netting site was south of Apples Road and west of Mt. Zion Road. The stream channel was approximately 10 m wide at this site and water up to 0.6 m deep filled almost the entire channel. No riffles occurred along this stretch of the stream and the substrate was highly compacted. The north bank was vertical and 3 m high. A forested riparian zone 30 m wide lay between this bank and Apples Road. East (upstream) of the net site a bend in the creek came very close to the road. There was extensive floodplain forest on the south side of the stream. The south bank was relatively steep and also 3 m high. The canopy was closed at the net site, but incomplete above other portions of the stream. Both poles were positioned under the branches of silver maple trees. Silver maple was the dominant species on the floodplain, but box elders and sycamores were also present.

Mist netting was conducted at this site on the night of 22 July 1996. It had rained earlier in the evening, but the sky was beginning to clear at dusk. The air was calm and the temperature 17°C at 2200 h. The moon was approaching the first quarter and the creek remained dark. Only one bat, a juvenile female little brown bat (*Myotis lucifugus*), was caught at this site.

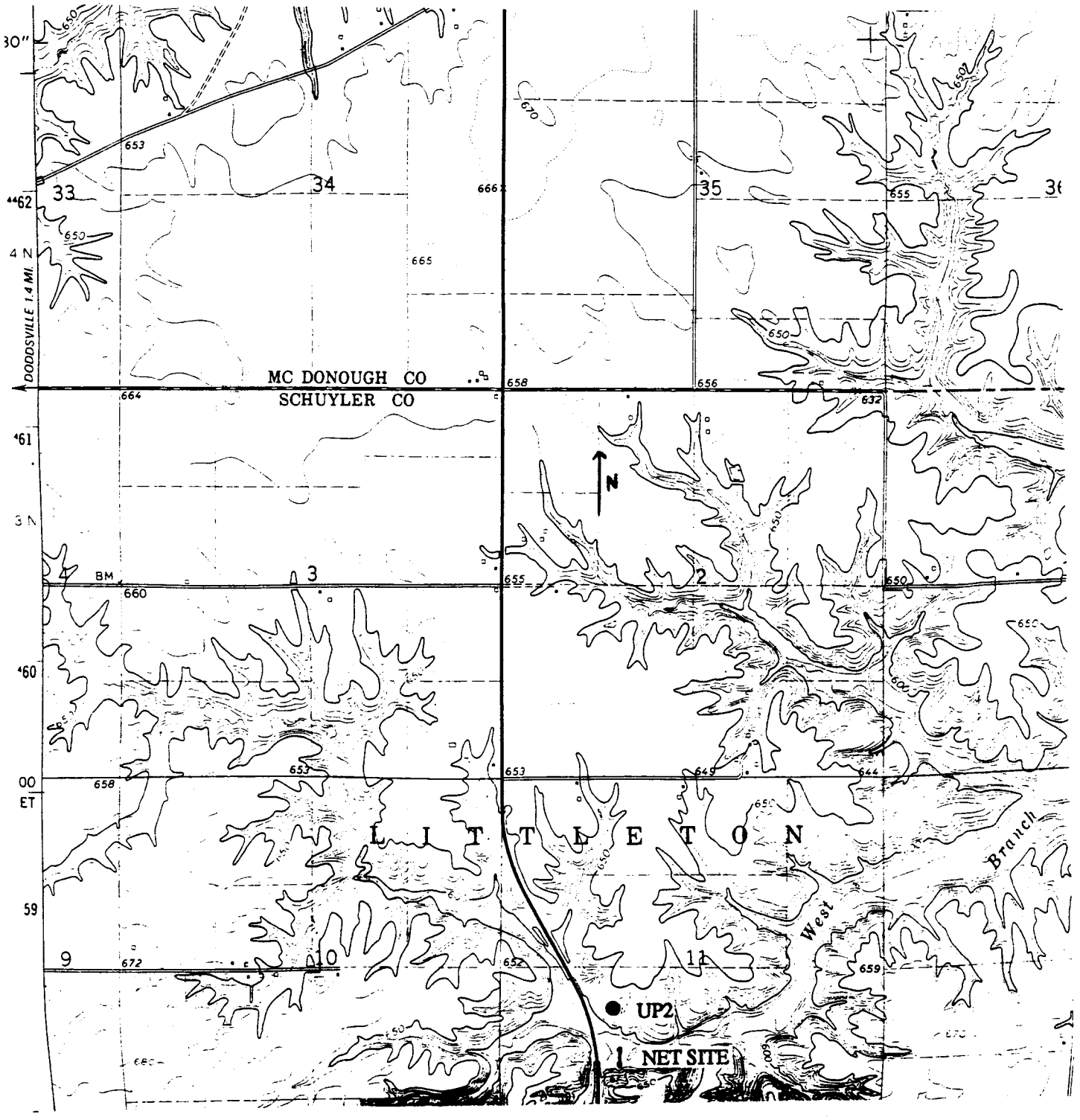

Figure 2. Locations of the Sugar Creek mist netting site and UP2 trapping grid, FAP 310 (US 67) project corridor, Schuyler County, Illinois (Industry 7.5' quadrangle)

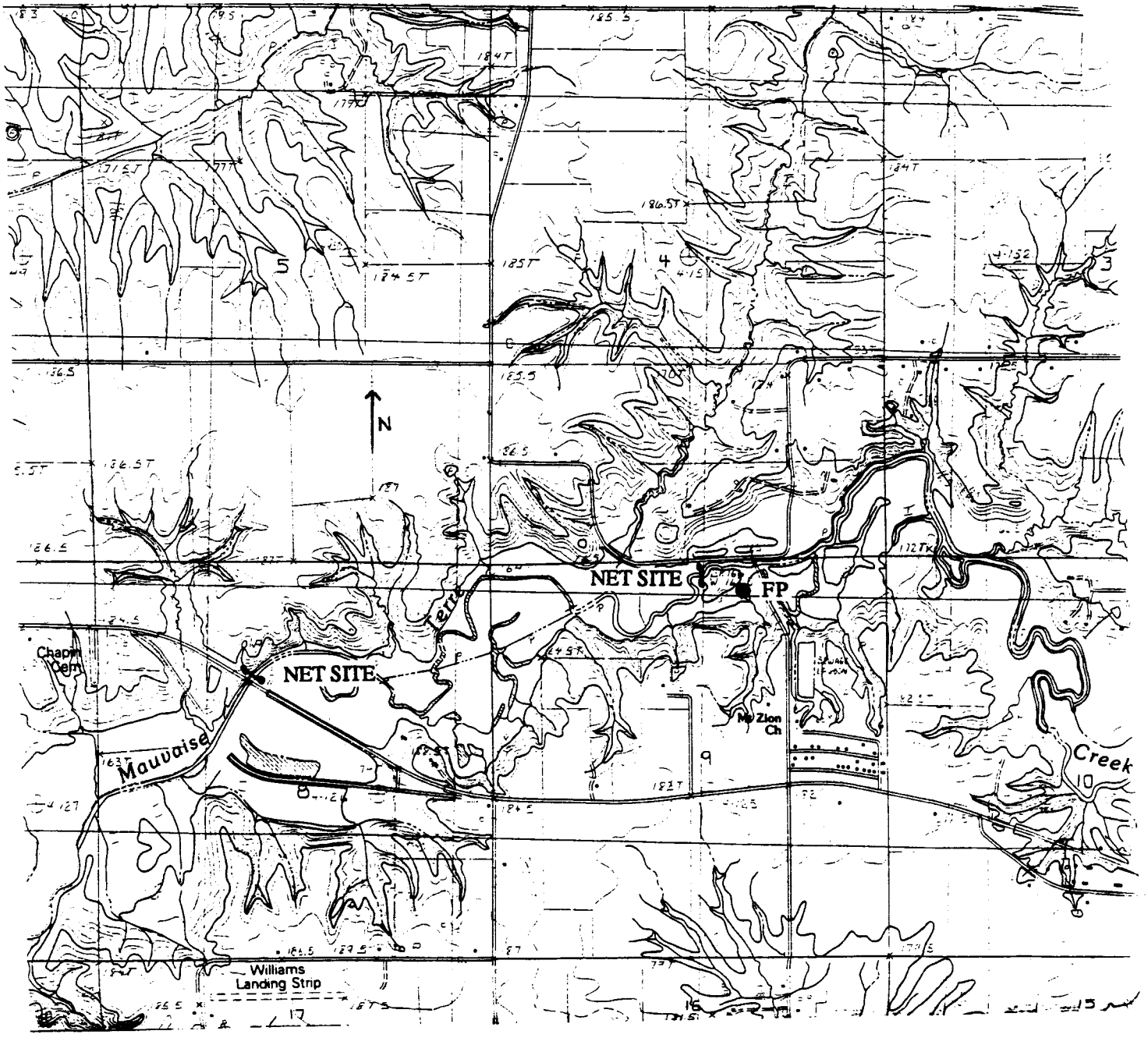

Figure 3. Locations of the Mauvaise Terre Creek mist netting sites and FP trapping grid, FAP 310 (US 67) project corridor, Morgan County, Illinois (Concord 7.5' quadrangle)

Mauvaise Terre Creek (T. 15N, R.11W, SW/4 Sec. 8; Concord 7.5' quadrangle; Figure 3)

This netting site was located approximately 40 m north (upstream) of the US 67 bridge at the far edge of a powerline cut that runs parallel to the highway. A few small trees grew near the bridge, but under the powerlines there was a large forbland on the east side of the creek and shrubland on the west side. The stream channel was approximately 12 m wide and water up to 1 m deep filled nearly all of the channel. There were no riffles along this portion of the creek. The substrate consisted primarily of mud and silt. The nets were placed under the first trees in the riparian forest zone. The east pole was positioned at the base of a relatively steep, 3-m high bank and under the branches of a silver maple. The wooded riparian zone on the east side of the stream was only 10 m wide at the net side, but became wider upstream. The west pole was at the edge of the water approximately 1.5 m from the base of the bank and under the branches of a honey locust (*Gleditsia triacanthos*). The west bank was a moderately steep hillside covered with upland forest. Other trees along the stream included American elm (*Ulmus americana*), box elder, and black locust (*Robinia pseudoacacia*).

This site was netted on the night of 23 July 1996. The temperature was 25°C at dusk and 23°C at 2300 h. The air was calm and the sky mostly clear. There was a first quarter moon that night. Three bats were captured, two juvenile female red bats (*Lasiurus borealis*) and a lactating female big brown bat (*Eptesicus fuscus*).

Small Mammal Trapping

Six trapping grids were established in the major habitat types within the project corridor during May and June 1996. Four grids were located in upland forest tracts (including two sand forests that may have originally been sand savannas), one was in floodplain forest, and the sixth was in sand prairie. The total trapping effort consisted of 720 trap-nights (one trap-night = one trap set for one night). There were 189 small mammal captures, for a good overall trapping success ([number of captures/number of trap-nights] x 100) of 26.3%. Trapping success at individual sites ranged from 14.2% to 41.7%. One hundred and nine individuals of six species (one insectivore and five rodents) were captured (Table 3). The white-footed mouse (*Peromyscus leucopus*) was the most frequently trapped species and was present at all sites. The northern short-tailed shrew (*Blarina brevicauda*) was captured at three of the six sites. At four of the grids only one or two species were caught, but four species were captured at one upland forest grid (UP3) and the sand prairie. A brief description and results for each trapping grid are presented below.

Table 3. Number of small mammals captured during 720 trap-nights at six trapping grids in the FAP 310 corridor, Cass, Schuyler, and Morgan counties, Illinois, May and June 1996

Species	Common name	No. of individuals
Insectivora		
Blarina brevicauda	northern short-tailed shrew	5
Rodentia		
Tamias striatus	eastern chipmunk	7
Peromyscus leucopus	white-footed mouse	80
Peromyscus maniculatus	deer mouse	8
Microtus ochrogaster	prairie vole	6
Microtus pinetorum	woodland vole	3

Upland forest 1 (UP1; T.17N, R.12W, NW/4 Sec. 5; Arenzville West 7.5' quadrangle: Figure 4)

This trapping grid was located in a dry sand forest (originally a sand savanna) on level terrain south of Beardstown. The forest was 40 to 60 years old and the dominant trees were black oak (*Quercus velutina*) and mockernut hickory (*Carya tomentosa*). The understory was dominated by sassafras (*Sassafras albidum*) and persimmon (*Diospyros virginiana*) and the relatively open shrub layer by fragrant sumac (*Rhus aromatica*). The herbaceous layer consisted primarily of poison ivy (*Toxicodendron radicans*) and Virginia creeper (*Parthenocissus quinquefolia*).

Trapping was conducted at this site on the nights of 20-22 May 1996. The sky was partly cloudy or clear for the first two nights of the trapping session, but the moon was approaching the first quarter so there was no bright moonlight. It rained during the third night. The overnight low temperatures were approximately 10 to 13°C. The lowest number of captures occurred at this grid (17) and trapping success was only 14.2%. Only one species, the white-footed mouse, was caught. Twelve individual white-footed mice were trapped, including at least one pregnant female. The relative abundance ([number of individuals/number of trap-nights] x 100) of this species was 10.0.

Upland forest 2 (UP2; T.3N, R.2W, SW/4 Sec. 11; Industry 7.5' quadrangle; Figure 2)

This grid was established on a steep south-facing slope above the West Branch of Sugar Creek. The forest was dominated by sugar maples (*A. saccharum*) 60 to 80 years of age, but a few large black and white (*Q. alba*) oaks were also present. There was a very dense shrub layer of sugar maples. The herbaceous layer was sparse, consisting of fragile fern (*Cystopteris protrusa*) and a few species characteristic of open woods such as whorled milkweed (*Asclepias quadrifolia*) and the sedge *Carex blanda*.

The UP2 grid was trapped on the nights of 3-5 June 1996. The sky was partly cloudy for most of the first two nights of the trapping session and some rain occurred during the third night. Thus, the amount of moonlight was limited even though there had been a full moon on 1 June. Overnight low temperatures were approximately 10°C for the first two nights and 15°C for the third night. There were 32 small mammal captures at this grid, for a trapping success of 26.6%. Seventeen individuals were caught. These were fifteen white-footed mice (relative abundance = 12.5), including two post-lactating females, and two eastern chipmunks (*Tamias striatus*).

Upland forest 3 (UP3; T.1N, R.1W, SW/4 Sec. 5; Rushville South 7.5' quadrangle; Figure 5)

This site was a dry upland forest on a fairly steep east-facing slope along Schuy-Rush Lake. The forest was young and heavily disturbed. Dominant tree species were white oak, Ohio buckeye (*Aesculus glabra*), and northern red oak (*Q. rubra*). The understory was open and few shrubs were present. The lower portion of the slope was largely devoid of herbaceous vegetation, but elsewhere herbaceous cover was relatively dense and consisted of Virginia creeper, Christmas fern (*Polystichum acrostichoides*), and common snakeroot (*Sanicula gregaria*). Because the area was relatively narrow, the grid consisted of three rows of traps (15, 15, and 10 traps per row).

Trapping at this grid was conducted on the nights of 3-5 June 1996 (see the description of UP2 for environmental conditions on those dates). There were 29 captures, representing a trapping success of 24.2%. This site had the highest species richness of all the forest grids; nineteen individuals of four species were caught. The white-footed mouse was the most frequently captured species. Eight white-footed mice, including one pregnant female, were trapped (relative abundance = 6.7). The other individuals captured on this grid were five eastern chipmunks, including a post-lactating female and three juveniles; three northern short-tailed shrews; and

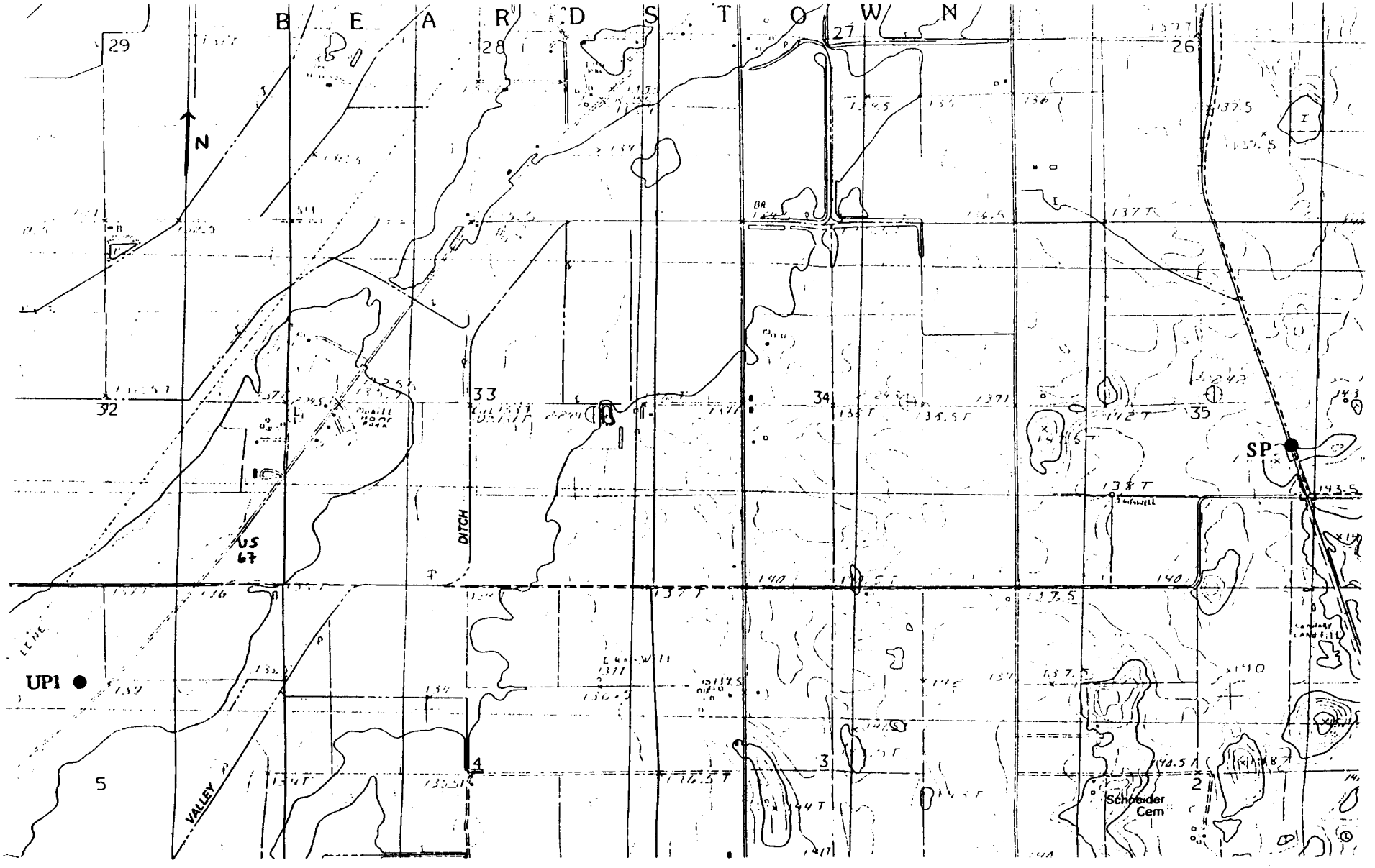

Figure 4. Locations of the UP1 and SP trapping grids, FAP 310 (US 67) project corridor, Cass County, Illinois (Arenzville West 7.5' quadrangle)

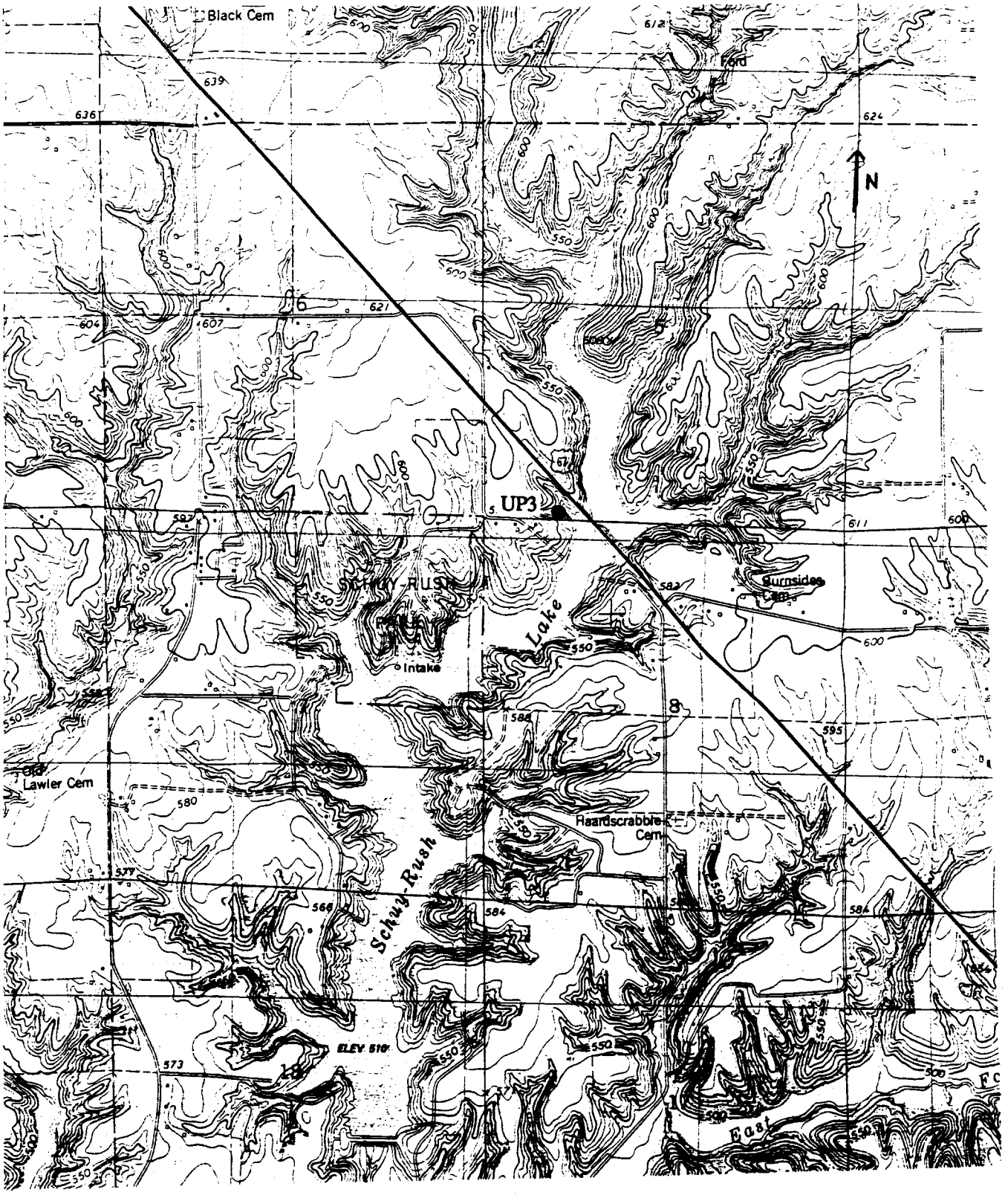

Figure 5. Location of the UP3 trapping grid, FAP 310 (US 67) project corridor, Schuyler County, Illinois (Rushville South 7.5' quadrangle)

three woodland voles (*Microtus pinetorum*), one of which was a juvenile. This was the only site at which woodland voles were trapped.

Upland forest 4 (UP4; 17N, R.13W, SE/4 Sec. 36; Cooperstown 7.5' quadrangle; Figure 6)

The UP4 grid was in a heavily disturbed sand forest (originally a sand savanna) on level terrain just north of the Cass/Morgan county line. This forest was only 20 to 40 years old and the dominant tree species were black locust, American elm, and black walnut (*Juglans nigra*). There was a relatively dense shrub layer dominated by Missouri gooseberry (*Ribes missouriense*) and the herbaceous layer consisted primarily of downy chess (*Bromus tectorum*), white snakeroot (*Eupatorium rugosum*), and Virginia creeper.

The UP4 grid was also trapped on the nights of 3-5 June 1996 (see the description of UP2 for environmental conditions). Trapping success was highest at this grid where there were 50 captures, representing a trapping success of 41.7%. Twenty-six individuals were caught, 25 of which were white-footed mice (relative abundance = 20.8). Two of the female white-footed mice had lactated recently. The other individual captured at this site was a northern short-tailed shrew.

Floodplain forest (FP; T.15N, R.11W, NW/4 Sec. 9; Concord 7.5' quadrangle; Figure 3)

This grid was located on the floodplain on the south side of Mauvaise Terre Creek. The forest was heavily dominated by silver maple, but box elder and green ash (*Fraxinus pennsylvanica*) were also present. There was a very sparse shrub layer, but relatively dense herbaceous cover. The dominant herbaceous species were panicled aster (*Aster simplex*), cutleaf coneflower (*Rudbeckia laciniata*), and stinging nettle (*Urtica dioica*). This area floods frequently as indicated by the large amount of drift that was present.

Trapping was conducted at the floodplain forest grid on the nights of 20-22 May 1996 (see the description of UP1 for environmental conditions). Trapping success was low (15.0%) on this grid where there were 18 small mammal captures. Only one species, the white-footed mouse, was caught. The eleven individuals (relative abundance = 9.2) included a lactating female and two juveniles.

Sand prairie (SP; T.18N, R.12W, SE/4 Sec. 35: Arenzville West 7.5' quadrangle; Figure 4)

Sand prairie occurred in the Burlington Northern Railroad right-of-way south of Beardstown. Common species included sand dropseed (*Sporobolus cryptandrus*), downy chess, porcupine grass (*Stipa spatea*), prickly-pear cactus (*Opuntia* sp.), spiderwort (*Tradescantia ohiensis*), and hairy puccoon (*Lithospermum caroliniense*). Some fragrant sumac shrubs were also present. Because the habitat was linear and very narrow, two lines of 20 traps each were established, one on each side of the track.

The sand prairie was also trapped on the nights of 20-22 May 1996 (see the description of UP1 for environmental conditions). There were 43 captures at this site, for a relatively high trapping success of 35.8%. Twenty-four individuals representing four species were captured at this site. Nine white-footed mice were caught (relative abundance = 7.5), but eight deer mice (*Peromyscus maniculatus*) and six prairie voles (*Microtus ochrogaster*) were also trapped. The deer mouse and prairie vole are grassland species and were only caught on this grid. All three of these species were breeding, as indicated by captures of a pregnant white-footed mouse and prairie vole and a juvenile deer mouse. One northern short-tailed shrew was also trapped at this site.

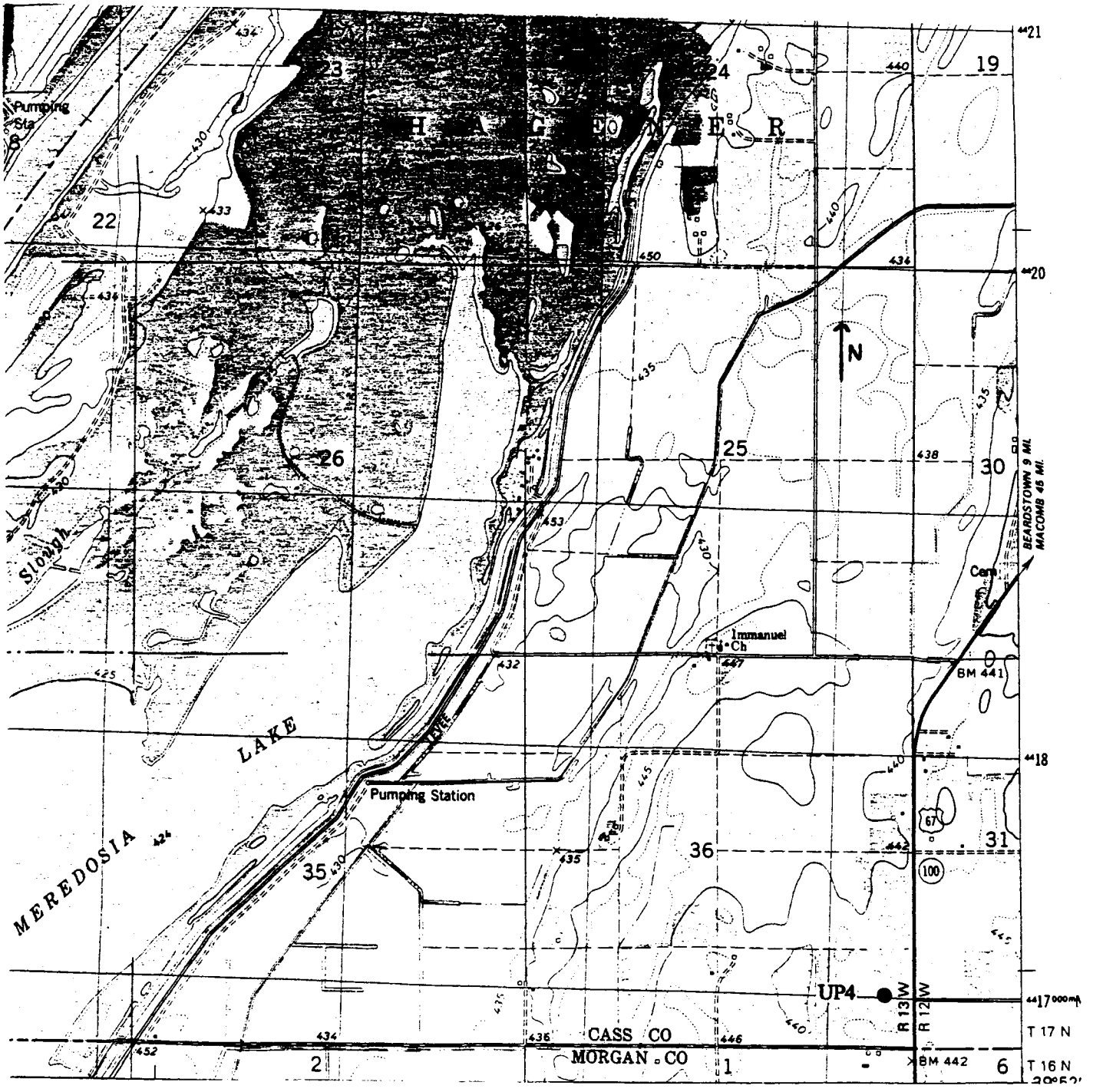

Figure 6. Location of the UP4 trapping grid, FAP 310 (US 67) project corridor, Cass County, Illinois (Cooperstown 7.5' quadrangle)

Observation

Fifteen additional mammal species were documented in the FAP 310 project corridor, either through direct observation or the discovery of sign (Table 4). Many of these species were found as roadkills along US 67 or the Arenzville-Concord Road. The habitat types in or near which each species was observed are also listed in Table 4. Because much of the corridor is agricultural land, the largest number of observed species (eight) was associated with this type of habitat. Almost as many species, however, were recorded in upland forest (seven), floodplain forest (seven), and sand prairie (six). The species observed in the most habitat types were the eastern cottontail (*Sylvilagus floridanus*), fox squirrel (*Sciurus niger*), and white-tailed deer (*Odocoileus virginianus*).

Table 4. Mammal species observed in the FAP 310 project corridor, Morgan, Cass, Schuyler, and McDonough counties, Illinois, 1996 and 1997

Species	Common name	Habitat Notes*
Didelphimorphia		
Didelphis virginiana	Virginia opossum	ag
Insectivora		
Scalopus aquaticus	eastern mole	upl, flp
Lagomorpha		
Sylvilagus floridanus	eastern cottontail	ag, upl, flp, sand prairie, res
Rodentia		
Marmota monax	woodchuck	upl, sand prairie
Sciurus carolinensis	gray squirrel	res (Beardstown), flp?
Sciurus niger	fox squirrel	ag, upl, flp, res
Geomys bursarius	plains pocket gopher	sand prairie
Castor canadensis	beaver	flp
Ondatra zibethicus	muskrat	stream
Carnivora		
Vulpes vulpes	red fox	ag, upl, flp
Procyon lotor	raccoon	ag, flp
Mustela frenata	long-tailed weasel	sand prairie
Mustela vison	mink	drainage ditch (ag)
Mephitis mephitis	striped skunk	ag, upl, sand prairie
Artiodactyla		
Odocoileus virginianus	white-tailed deer	ag, upl, flp, sand prairie

* ag = agricultural land, upl = upland forest, flp = floodplain forest, res = residential area

Threatened and Endangered Species

Habitat requirements, records, and results of field surveys for the three endangered or threatened species that have any potential to occur in the FAP 310 project corridor are presented below.

Indiana bat -- Indiana bats congregate in a limited number of caves and mines for hibernation, but are more widely dispersed during the summer (Barbour and Davis 1969). Indiana bat maternity colonies roost primarily beneath slabs of exfoliating bark on dead trees, but have also been found beneath the "shaggy" bark of certain live hickories (*Carya*) and in tree cavities (Cope et al. 1973; Humphrey et al. 1977; Gardner et al. 1991b; Callahan 1993; Kurta et al. 1993a, 1993b, 1996). Males and non-reproductive females may roost in caves or abandoned mines as well as trees

during the summer. Roost trees used by this species have been located in both upland and floodplain forests (Gardner et al. 1991b, Callahan 1993). Most roost trees are relatively large with a diameter at breast height of at least 30 cm (Gardner et al. 1991b; Callahan 1993; Kurta 1993a, 1996). Tree species that have been used by Indiana bat maternity colonies in Illinois are slippery elm (*Ulmus rubra*), northern red oak, shagbark hickory (*Carya ovata*), silver maple, cottonwood, post oak (*Quercus stellata*), bitternut hickory (*C. cordiformis*), white oak, American elm, sycamore, sweet pignut hickory (*C. ovalis*), and green ash (Gardner et al. 1991b; Kurta et al. 1993a; Gardner and Hofmann, unpublished data). Indiana bats forage both in and along the edges of the canopy of floodplain and upland forests (Humphrey et al. 1977, LaVal et al. 1977, Brack 1983, Clark et al. 1987, Gardner et al. 1991b).

A Habitat Suitability Index (HSI) model for the summer habitat of female and juvenile Indiana bats has been developed by Rommé et al. (1995). This model assumes that optimal roosting habitat would have intermediate canopy cover (60 to 80%), overstory trees with a mean dbh of at least 40 cm, more than 14 potential roost trees (snags) per hectare, an open understory (≤ 30% cover), and live trees belonging to species that would provide potential roost sites in the future. Optimal foraging habitat would have a moderately closed overstory canopy and an open understory. The model also includes two landscape attributes that modify habitat suitability; the suitability of an area can be reduced because of distance to water or limited forest cover. If less than 5% of an area is forested, the HSI of the site is assumed to be zero.

There are Indiana bat records for all four counties in which the FAP 310 corridor is located, but none of these records is within the actual corridor. The record for Morgan County is a migrating individual collected in Jacksonville in October 1971 (Hoffmeister 1989). Migrating individuals were also found in Macomb in McDonough County in 1980, 1981, and 1982 (Clark and Clark 1987), but a pregnant female was captured at Camp Creek in the western part of the county in May 1985 (INHD, Gardner et al. 1996). That location is approximately 11 km west of the project corridor. A lactating female and a juvenile Indiana bat were caught on Missouri Creek in Schuyler County, approximately 15 km west of the corridor, in July 1985 (INHD, Gardner et al. 1996). A maternity colony was discovered in the vicinity of Panther Creek southeast of Chandlersville in eastern Cass County in 1992 (INHD, Kurta et al. 1993a). That location is approximately 30 km east of the project corridor. No Indiana bats were caught during three nights of mist netting in the corridor.

River otter -- River otters occupy a variety of aquatic habitats, from coastal swamps and marshes to high mountain lakes (Toweill and Tabor 1982). They are abundant in estuaries, the lower reaches of rivers, and the tributaries and lakes of unpolluted river systems, but scarce in densely populated areas, especially if the water is polluted (Toweill and Tabor 1982). In Illinois, river otters have been found in shallow lakes, sloughs, cypress swamps, rivers, streams, drainage ditches, and ponds (Anderson and Woolf 1984). Habitat used by river otters in northwestern Illinois has the following characteristics: isolation from the main river channel (providing a relatively stable water level), extensive riparian forest (or emergent herbaceous vegetation), the persistence of open water during winter, good water quality (and healthy fish populations), the presence of suitable den sites (e.g. beaver lodges, log piles, exposed tree roots), and minimal human disturbance (Anderson and Woolf 1984). River otters occupy large home ranges; at the Lamine River Wildlife Area in Missouri otter home ranges were 11-78 km in length (Erickson et al. 1984). Only a portion of the range is used at any time; activity centers are located in areas with abundant food and suitable shelter and are changed frequently (Melquist and Hornocker 1983). River otters may travel long distances, 160 km or more, in search of suitable habitat (Jackson 1961).

The INHD contains recent records of river otters for 35 Illinois counties. The main breeding population of this species inhabits the backwaters and tributaries of the Mississippi River in Whiteside, Carroll, and Jo Daviess counties in northwestern Illinois (Anderson 1995). Smaller

populations also occur in the Cache and Big Muddy river systems of southern Illinois and the numbers of reports along the Rock River and the middle portion of the Mississippi River have been increasing (Anderson 1995). There are no river otter records for McDonough and Schuyler counties (INHD). The record of an otter taken near Meredosia in Morgan County and cited by Hoffmeister (1989) dates back to 1926; there are no more recent records for that county (INHD). Hubert (1978) reported an otter sighting by a commercial fisherman in Cass County in 1976.

The extensive floodplain forest along Mauvaise Terre Creek was investigated during July 1996, but no evidence for the presence of river otters was found. During January 1997 the extensive floodplain forest along the north bank of the Illinois River (between the river channel and Curry Lake) and the narrow band along the south bank (west of the US 67 bridge) were searched when snow was present. No river otter sign was found. The streams and drainage ditches in the corridor had very little open water at that time and were not checked for otter sign.

Bobcat -- Optimal habitat for bobcats in the Midwest is rough or rolling terrain where large tracts of second-growth forest with dense underbrush are interspersed with open areas (e.g. clearings or successional fields), streams, and rock outcrops (Schwartz and Schwartz 1981, McCord and Cardoza 1982). Bobcats also inhabit floodplain forests along major rivers and swamps (Hoffmeister 1989). Rollings (1945) thought that key factors in bobcat habitat selection were prey abundance, protection from severe weather, the presence of suitable den sites, dense cover, and a lack of human disturbance. The forest edges and open areas in a habitat mosaic are excellent hunting grounds for bobcats which prey primarily on medium-sized mammals, especially lagomorphs (Schwartz and Schwartz 1981, McCord and Cardoza 1982). Small caves, rock crevices, rock piles, logs, stumps, hollow trees, dense thickets, and brush piles are used as resting sites and natal dens (Jackson 1961, Schwartz and Schwartz 1981, McCord and Cardoza 1982). Bobcats change resting sites frequently, except for females with young who occupy dens in inaccessible areas. Ledges also appear to be important elements of bobcat habitat, serving as activity centers, especially during courtship, as well as providing protective cover (McCord and Cardoza 1982). Bobcats travel extensively while hunting and require large tracts of suitable habitat (Rollings 1945, McCord and Cardoza 1982). Males in Missouri have annual home ranges of 46 to 72 km^2 and female ranges cover 13 to 31 km^2 (Schwartz and Schwartz 1981).

The INHD includes recent bobcat records for 24 Illinois counties, but none of these records is from Morgan, Cass, Schuyler, or McDonough County. There is an historical record for the bobcat from Cass County in 1912 (Mohr 1943). Thom (1981) indicated that the bobcat was known to occur in McDonough County, but provided no date or location. No evidence for the presence of bobcats was found in the project corridor.

Discussion

Mammalian Fauna

Much of the FAP 310 project corridor consists of agricultural and developed land. The corridor, most of which is narrow, also includes small portions of several forested areas and isolated patches of sand prairie. The only extensive area of natural habitat is at the southern end of the corridor where it widens to encompass a forested tract along Mauvaise Terre Creek. Despite the limited amount of natural habitat that it contains, the corridor can be used by many mammal species. Several medium- to large-sized mammals are habitat generalists that have adapted to landscapes which are mosaics of agricultural land and natural habitats. Small terrestrial mammals with their correspondingly small home range requirements can utilize forested areas and the variety of grass/forb habitats (e.g. rights-of-way, pastures, and residential property as well as sand prairie) within the corridor. The corridor also provides suitable habitat for bats that roost in forests or buildings during the summer.

In all, 24 mammal species were captured or observed in the FAP 310 project corridor during this survey. These species do not represent the entire mammalian fauna of the corridor because it is difficult to document the presence of some mammals, especially using a limited number of methods. Only 25 species have been previously documented from the four counties through which the corridor passes; however, range maps in Hoffmeister (1989) and Jones and Birney (1988) suggest that 44 species (excluding endangered or threatened species) could occur in west-central Illinois.

Mist netting at three sites within the FAP 310 corridor resulted in the captures of only four bats. These bats were members of three very common species -- the big brown bat, little brown bat, and red bat. Their presence in the corridor is not surprising; the first two species often roost in buildings and red bats roost in trees or shrubs, including those in residential areas (Barbour and Davis 1969, Hoffmeister 1989). Another species likely to occur in the corridor during the summer is the eastern pipistrelle (*Pipistrellus subflavus*). Pipistrelles are widely distributed in Illinois (INHS, unpublished data) and their roost sites include trees and buildings (Hoffmeister 1989). During spring and autumn when bats are migrating between their summer ranges and hibernation sites (or winter ranges) any of the eight non-listed species as well as the federally and state-endangered Indiana bat could roost in the corridor. Although some big brown bats hibernate in buildings, bats will mostly be absent from the corridor during the winter.

Overall trapping success using Sherman live traps was quite high (26.3%) during this survey. A total of six species, one insectivore (the northern short-tailed shrew) and five rodents (the eastern chipmunk, deer mouse, white-footed mouse, woodland vole, and prairie vole), was caught. The project corridor is within the ranges of 14 species whose size (i.e. total length < 30 cm) and habits (e.g. not completely fossorial or arboreal) make it possible for them to be caught in Sherman traps (Hoffmeister 1989). All small mammal species that occur in the corridor were probably not captured during this survey. One reason is that a single trapping method is not equally effective in capturing all species of terrestrial small mammals (Call 1986). The use of pitfall traps is recommended for capturing shrews (Call 1986). As insectivores, shrews would not be readily attracted to the bait used in the Sherman traps and smaller species may not weigh enough to set off the trap mechanism. Five northern short-tailed shrews were caught during this survey (four in upland forests and one in sand prairie), but this species is undoubtedly more abundant than this number suggests. The northern short-tailed shrew occurs in both forests and grass/forb habitats and is one of the most common small mammals in Illinois (Hoffmeister 1989). Two smaller species that are likely to occur in the grass/forb habitats within the FAP 310 corridor are the southeastern shrew (*Sorex longirostris*) and least shrew (*Cryptotis parva*).

Other small mammal species may have been missed by this survey because the habitats in which they occur were not specifically sampled. The non-native house mouse (*Mus musculus*) and Norway rat (*Rattus norvegicus*) occur throughout Illinois. These species occupy residences, barns, warehouses, and other types of buildings, although the house mouse is found in natural habitats as well (Hoffmeister 1989). Buildings were not checked during this survey, but house mice and Norway rats are likely to occur within the project corridor. The thirteen-lined ground squirrel (*Spermophilus tridecemlineatus*) inhabits areas with short grass or forbs, including roadsides, cemeteries, and lawns (Hoffmeister 1989). Trapping was not conducted in such maintained areas, but this species is likely to be present.

The species trapped in the greatest numbers and on every grid was the white-footed mouse. This was not unusual because this rodent has been described as "the most ubiquitous native species in Illinois" and occurs wherever trees or shrubs are present (Hoffmeister 1989). The relative abundance of white-footed mice was higher in upland forest (overall relative abundance = 12.5) than in the floodplain forest (9.2). The floodplain had been inundated earlier in the year and recruitment into the population may have been slowed. In a central Illinois study, densities of

forest than in upland forest (Batzli 1977). The relative abundance of white-footed mice was lowest in the sand prairie where only shrubs were present.

Given the differential response of species to traps, an easily-trapped species may appear to be the most numerous at a site even if this is not the case (Call 1986). In this survey, the white-footed mouse was highly trappable (as indicated by large numbers of re-captures), but this species was undoubtedly very abundant. However, when individuals of an easily-trapped species occupy traps, they are no longer accessible to uncommon or "trap shy" species (Call 1986). Thus, the eastern chipmunk, deer mouse, prairie vole, and woodland vole may well have been under-represented in the catch.

The Sherman traps were effective at catching voles during this survey. Prairie voles inhabit the sand prairie along the Burlington Northern Railroad and undoubtedly occur in other grass/forb areas throughout the project corridor. The prairie vole is a common species, but its abundance can vary greatly during different years (e.g. Getz et al. 1987). The capture of woodland voles in the upland forest at Schuy-Rush Lake was somewhat unexpected because this species is infrequently trapped in Illinois (JEH, personal observation). According to Hoffmeister (1989) its habitat in central Illinois is forests with oaks, maples, and hickories and large amounts of downed wood and leaf litter. Woodland voles may occur in other upland forest tracts within the corridor. The corridor is just south of the known range of another vole; the meadow vole (*Microtus pennsylvanicus*) has been collected north of Macomb in McDonough County and in southern Fulton County (near Lewistown) which is adjacent to McDonough and Schuyler counties (Hoffmeister 1989). In eastern Illinois this species has expanded its range southward in recent decades (Getz et al. 1978, Hoffmeister 1989). Thus, it is possible that meadow voles occur in grass/forb areas, such as roadsides or pastures, in the northern portion of the corridor.

The characteristic soil mounds of the fossorial plains pocket gopher (*Geomys bursarius*) were found in the sand prairie along the Burlington Northern Railroad south of Beardstown. This species has a limited distribution in Illinois, occurring in a band east and south of the Illinois and Kankakee rivers (Hoffmeister 1989). Pocket gophers inhabit areas that have well-drained soil and are not deeply plowed; their mounds are most commonly seen along roadside embankments (Hoffmeister 1989). Pocket gophers could only occur in the southern portion of the corridor (i.e. Cass and Morgan counties) and no mounds were observed except along and near the railroad.

The southern flying squirrel (*Glaucomys volans*) is nocturnal and largely arboreal; these habits make it very difficult to observe or trap by conventional methods. Flying squirrels inhabit hardwood forests, especially where the trees have cavities and there is water nearby (Hoffmeister 1989). It is likely that this species occurs in the project corridor.

Several medium- to large-sized mammals were documented in the FAP 310 corridor, either through direct observation or the discovery of sign. These included most of the state's economically important mammal species, i.e. furbearers and game animals. White-tailed deer were recorded throughout the corridor in all types of habitat. Numerous raccoons (*Procyon lotor*) were found as roadkills along US 67 and the Arenzville-Concord Road (near the proposed eastern alignment) and raccoon tracks were abundant on the floodplain of Mauvaise Terre Creek. The Virginia opossum (*Didelphis virginiana*), eastern cottontail, and striped skunk (*Mephitis mephitis*) appeared to be common as well. These four species are habitat generalists and would occur throughout the corridor. A long-tailed weasel was found in a sand prairie near the Burlington Northern Railroad. Weasels are hard to detect because they would not be caught in Sherman traps, but are small enough that they are unlikely to be seen. Long-tailed weasels inhabit open woodlands, shrublands, and agricultural areas as well as grasslands (Hoffmeister 1989) and are likely to occur in other parts of the corridor. A road-killed red fox (*Vulpes vulpes*) was seen in the corridor and fox tracks found in forested areas of the corridor were assumed to

have been made by this species rather than the gray fox (*Urocyon cinereoargenteus*). The red fox utilizes forest edges, grasslands, shrublands, and agricultural land, whereas the gray fox is an inhabitant of dense forests (Jackson 1961, Hoffmeister 1989). Fox squirrels were observed more frequently than gray squirrels during this survey. Nixon et al. (1978) indicated that gray squirrels were common in most areas of Cass and Schuyler counties through which the project corridor passes, but scarce, rare, or absent in other parts of the corridor. Fox squirrels can utilize wooded fencerows, forest edges, and small woodlots whereas gray squirrels inhabit extensive forest tracts or residential areas (Hoffmeister 1989). The beaver (*Castor canadensis*) and muskrat (*Ondatra zibethicus*) are aquatic species and mink (*Mustela vison*) are usually associated with aquatic and wetland habitats (Hoffmeister 1989).

No coyotes (*Canis latrans*) were observed in the FAP 310 corridor. Somewhat indistinct tracks in the snow in a sand prairie near the Burlington Northern Railroad were probably those of a coyote and this species has been observed recently near Macomb (Steven Amundsen, INHS, personal communication). Therefore it is very likely that coyotes occur throughout the corridor. The badger (*Taxidea taxus*) is a grassland species that is found throughout Illinois (Warner and Ver Steeg 1995). Although sand prairie areas near the Burlington Northern were searched for evidence of badgers, none was found. Nonetheless, it is possible that grass/forb habitats in the corridor are used by this species.

The mammalian fauna of the two alternate alignments between Beardstown and Jacksonville would be very similar. The eastern alignment includes less forest cover, more grass/forb area (including sand prairie), and fewer buildings than the alignment that follows existing US 67. Because many mammals are habitat generalists, differences in relative amounts of habitat types would affect the abundance of individual species more than species composition. Thus, the eastern alignment would support fewer woodland mammals, such as fox squirrels, and more grassland mammals, such as plains pocket gophers, and provide less roosting habitat for bats.

Threatened and Endangered Species

Although no Indiana bats were captured in the FAP 310 project corridor, these results do not prove conclusively that this species is absent. Several Indiana bat maternity colonies are known to occur in west-central Illinois (Gardner et al. 1996) and some suitable habitat for Indiana bats is present in the corridor. However, because this species is so rare it is possible that Indiana bats occur in the corridor, but not very likely. Forests associated with Mauvaise Terre Creek and the Illinois River seem to provide the best foraging habitat in the corridor and forests along the West Branch of Sugar Creek, Schuy-Rush Lake, and Indian Creek south of Arenzville would also be suitable. The requirements of maternity colonies for roosting habitat are more restrictive than for foraging habitat (Rommé et al. 1995). The forest along Mauvaise Terre Creek is relatively young and contains few potential roost trees. Therefore, it is not suitable roosting habitat for Indiana bats at this time. As the silver maples and green ash on the floodplain mature and die, more potential roost sites will become available. Numerous potential roost trees (snags) were found in the floodplain forest north of the Illinois River on both sides of the US 67 bridge. This forest may or may not actually be suitable as roosting habitat for Indiana bats; its use would depend on whether the noise of traffic on the bridge is too much of a disturbance. In Illinois roost trees occupied by pregnant and lactating female Indiana bats were rarely less than 500 m from paved roads (Gardner et al. 1991b). The suitability of the floodplain could also be influenced by the types of human activity that occur in the area (for example, there was considerable evidence of tree cutting) and by flooding (severe flooding might inundate actual roost sites). High-quality roosting habitat for maternity colonies seems to be limited, but individual or small groups of males might roost in the corridor during the summer. During the spring and autumn, migrating Indiana bats from colonies in west-central Illinois could roost temporarily in trees or on buildings anywhere in the corridor. No suitable hibernation sites for this species (i.e. caves or abandoned mines) are present in the corridor.

It is highly unlikely that river otters were present in FAP 310 project corridor during the period covered by this survey. There have been no recent reports of river otters from Morgan, Cass, Schuyler, and McDonough counties (INHD) and any otters on the Illinois River at Beardstown or Schuy-Rush Lake would probably be noticed by fishermen, boaters, or other people. Most of the stream segments within the project corridor are either very narrow or deeply entrenched and have little riparian vegetation, and are not suitable habitat for river otters. Although there is extensive riparian forest along Mauvaise Terre Creek, no otter sign was found there during summer 1996 and the creek contained very little open water in January 1997. Thus, this creek would typically provide suitable habitat for river otters only during the spring, summer, and autumn. A relatively large tract of floodplain forest is present on the north side of the Illinois River at Beardstown, but this area was completely inundated during spring and summer 1996. It could not be investigated during those times and was not available as denning habitat for river otters. The river had some open water during January 1997 and the floodplain was searched for river otter sign, but none was found. Log and brush piles which could provide denning sites for otters are present on this floodplain.

River otters from Louisiana were released in the Illinois River Basin in 1996 and additional releases are planned (Mueller 1996). If river otters were to occupy this stretch of the Illinois River, they would be more likely to concentrate their activities in areas upstream (Sanganois Fish and Wildlife Area) and downstream (Meredosia National Wildlife Refuge) of the project corridor where backwater lakes and sloughs provide better habitat. The river at Beardstown probably would be used primarily as a travel corridor.

It is also highly unlikely that bobcats inhabited the project corridor at the time of this survey. There are no recent records for this species in Morgan, Cass, Schuyler, and McDonough counties (INHD), although bobcats are solitary, nocturnal, and wary of humans and could occupy an area without being noticed. Because bobcats require extensive home ranges, most of the corridor is much too narrow to support a resident bobcat. In addition, much of the corridor consists of agricultural fields, developed land, highway or railroad rights-of-way, and other open areas where very few potential den sites for bobcats would be available. These areas lack the caves, rock crevices, and rock ledges favored by this species. Some den sites would be present in forested portions of the corridor, but it does not seem likely that bobcats would den in woods close to US 67. Parts of the corridor, however, are within larger areas of suitable bobcat habitat and have the potential to be visited by a bobcat if one were present now or in the future. The corridor would probably be used for hunting and crossed during the animal's extensive travels through its home range. The southern portion of the project corridor widens to include the tract of floodplain and upland forest along Mauvaise Terre Creek, but this area in itself is still not large enough to support a resident bobcat. Mauvaise Terre Creek has a forested riparian zone that extends to its confluence with the Illinois River and could be used as a dispersal or travel corridor.

The following areas through which the project corridor passes encompass extensive mosaics of wooded and open habitats and were identified as suitable bobcat habitat: 1.) The Sugar Creek drainage and tributaries of the La Moine River in Schuyler County (Industry, Rushville North, and Erwin 7.5' quadrangles), 2.) The area which includes the East Fork of Crane Creek, Schuy-Rush Lake, the Town Branch of the La Moine River, and the lower reaches of Sugar Creek, also in Schuyler County (Rushville South and Beardstown 7.5' quadrangles), and 3.) The dissected uplands on the arc of bluffs that crosses the Morgan/Scott county line (Meredosia, Chapin, and Florence 7.5' quadrangles).

Summary

Mammal species known or likely to occur in the FAP 310 project corridor are listed in Table 5. Some of these species are habitat generalists that could be found throughout the corridor; notes are provided for species that have more specific habitat requirements.

Table 5. Mammal species known or likely to occur in the FAP 310 (US 67) project corridor, Morgan, Cass, Schuyler, and McDonough counties, Illinois

Species	Common name	Habitat Notes
Didelphimorphia		
*Didelphis virginiana**	Virginia opossum	
Insectivora		
Scalopus aquaticus *	eastern mole	
Sorex longirostris	southeastern shrew	
Blarina brevicauda *	northern short-tailed shrew	
Cryptotis parva	least shrew	grass/forbs
Chiroptera		
Eptesicus fuscus *	big brown bat	roost in buildings
Myotis lucifugus *	little brown bat	roost in buildings
Lasiurus borealis *	red bat	roost in trees, shrubs
Pipistrellus subflavus	eastern pipistrelle	roost in trees, buildings
Lagomorpha		
Sylvilagus floridanus *	eastern cottontail	
Rodentia		
Tamias striatus *	eastern chipmunk	upland forests
Marmota monax *	woodchuck	
Spermophilus tridecemlineatus	thirteen-lined ground squirrel	short grass
Sciurus carolinensis *	gray squirrel	forests, Beardstown
Sciurus niger *	fox squirrel	wooded areas
Glaucomys volans	southern flying squirrel	forests
Geomys bursarius *	plains pocket gopher	sand prairie
Castor canadensis *	beaver	aquatic habitats
Peromyscus maniculatus *	deer mouse	grass/forbs
Peromyscus leucopus *	white-footed mouse	
Microtus ochrogaster *	prairie vole	grass/forbs
Microtus pinetorum *	woodland vole	upland forests
Ondatra zibethicus *	muskrat	aquatic habitats
Mus musculus	house mouse	in or near buildings
Rattus norvegicus	Norway rat	buildings
Carnivora		
Canis latrans	coyote	
*Vulpes vulpes**	red fox	
Procyon lotor *	raccoon	
Mustela frenata *	long-tailed weasel	
Mustela vison *	mink	near water
Mephitis mephitis *	striped skunk	
Artiodactyla		
Odocoileus virginianus *	white-tailed deer	

* documented in the project corridor during this survey

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